needing considerable orthopaedic treatment, and about 80% requiring treatment for hydrocephalus and approximately the same percentage for urinary tract problems.

Any readjustment of the crude figures in this way does not divert from his point—for example, that there will be 300 to 400 of these patients accumulating each year at the age of 5 requiring special schooling arrangements. To put them alongside traumatic paraplegia is only relevant inasmuch as the English tradition for the fullest care and rehabilitation of traumatic paraplegia has now been established as one of the best in the world. On the other hand, it should be said in this present day we are no longer paying a very high price for the treatment of poliomyelitis, tuberculosis, and various other infections which used to constitute the bulk of paediatric practice. In this context, it would be reasonable to turn towards the provision of further care for these myelomeningocele children from such financial resources as the State, voluntary organizations, and parental contribution can provide in the hope that ultimately prevention will precede cure.

If there is an undertone to Mr. Lightowler's theme that it might be better to do nothing when presented with these infants in the neonatal period then it is also relevant to say that the problem will often not die out at that stage, but because of accepted nursing and medical care, including the use of antibiotics, the infant will be re-presented in a more grotesque state some weeks or months later. Furthermore, the spectrum and variations of the condition are such, even to those who have seen a great deal of it, that it is unlikely that a method of infallible neurological assessment can be devised whereby the sheep can certainly be separated from the goats in the early neonatal period when such a decision would be relevant. Whatever the price of treatment, myelomeningocele would appear to be a problem which has to be faced as realistically as possible.—I am, etc.,

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1 Brocklehurst, G., *Developmental Medicine and Child Neurology*, 1971, **13**, 2, 147.

Laparoscopic Sterilization through Cusco's Speculum

SIR,—Mr. J. O. Greenhalf and Mr. H. R. M. Roberts (31 July, p. 304) draw attention to the risk of haemorrhage occurring from the inferior epigastric vessels after laparoscopy. This danger can be reduced to a minimum by inserting the trochar and cannula for the biopsy forceps lateral to the rectus abdominal muscle, and through an area shown to be free of vessels by transillumination. Steptoe[1] has shown that laparoscopic sterilization is a safe and economic procedure with considerable advantages for the patients. Like many other procedures in medicine, however, laparoscopy is dangerous if it is not performed with vigilance and careful attention to the details of the technique.

The use of a small Pfannenstiel incision for sterilization is not new. Using a 3-5 cm incision, according to the size of the patient, it is not difficult to pick up the tubes between two fingers and to ligate them in the normal way. It is not necessary to keep these patients in hospital for long but they have more discomfort than after laparoscopy and are, of course, liable to all the complications of laparotomy.—I am, etc.,

S. J. STEELE

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London W.1

1 Steptoe, P. C., *I.P.P.F. Medical Bulletin*, April 1971, **5**, No. 2, 4.

SIR,—I must protest about your misuse of the term "Laparoscopic Sterilization through Cusco's Speculum" as title for the letter by Mr. J. O. Greenhalf and Mr. H. R. M. Roberts (31 July, p. 304). The method of suprapubic incision for sterilization which they describe is the rediscovery of a technique already in use by many gynaecologists. It matters not whether a proctoscope, Cusco's speculum, or any other small retractors are used. Indeed the procedure is facilitated if the operator cares to lock the uterine cannula in position so that the uterus can be raised and rotated so as to bring the oviducts into a medial position just beneath the abdominal incision.

May I remind your correspondents that the laparoscope is a telescope with magnifying lenses, and the detail and scope afforded by it in experienced hands are much superior to naked eye inspection through a limited incision. However, it is essential that the operator possesses the correct equipment and has been properly trained in the technique.

Intra-abdominal haemorrhage from the insertion of the trocar and cannula for introduction of the biopsy forceps is entirely avoidable. The light source used should be a lamp of at least 150 watts, better still 250 or even 500 watts, and an angled vision laparoscope should be employed. This enables one to transilluminate the majority of abdominal walls, which light up like a red balloon. The blood vessels are readily located and a safe point for introduction of the trocar away from them can be selected. This fails only in the grossest of obese patients, and laparoscopic sterilization by this technique should not be attempted in such patients, although an operating laparoscope can be used alternatively.

In the case described by your correspondents blood was seen to be running down the sheath of the biopsy forceps. When the forceps was withdrawn, its site of entry into the peritoneum should have been carefully inspected through the laparoscope, and if blood was seen to be dripping down, or flowing in an arc around the parietal peritoneum, as it more usually does, then the abdominal wound should have been explored immediately and the vessel secured. The laparoscope should have been left in position so as to make a final inspection to be satisfied that the vessels had been properly sealed. Of course, a full inspection elsewhere is always necessary to make sure that no accidental damage has been caused anywhere.

Inspections of these types are carried out as routine in all my cases in Oldham, whether bleeding is suspected or not. Hundreds of cases of sterilization by laparoscopic diathermy division of the tubes have been safely performed in my department, the patients attending as day patients only. In over 3,000 laparoscopies we have had to explore the abdominal wall for bleeding on only two occasions, and for intra-abdominal bleeding only once. The death rate in Oldham is nil, and the morbidity negligible.

Laparoscopy is now accepted all over the world as a valuable, even brilliant, diagnostic and operative technique. However, the laparoscopist must possess the proper instruments, and must have been fully trained. Let us not confuse its limitations with those of the operator. If I may draw a parallel, the fact that some gynaecologists are not much good at removing the uterus by the vaginal route does not make vaginal hysterectomy a bad operation.

Laparoscopic sterilization in trained hands is a safe, rapid, simple procedure which causes a minimal disturbance to patients of only a few hours.—I am, etc.,

PATRICK STEPTOE

Oldham, Lancs

Smallpox Vaccination

SIR,—Surely the herd immunity that we now have is what it has always been about. To give up this as is now contemplated, and at a time when air travel spreads disease so effectively, is a mistake. The Department of Health and Social Security circularized us with a *Health Trends*[1] recently claiming the whooping cough was down to almost zero when general practitioners were having the last upsurge of cases. At least I was. Was it a virus in pertussis clothing?

Has not the spread of cholera to Africa and Europe not been a warning? Who will take the blame when we suffer a smallpox epidemic in the next ten years?—I am, etc.,

SYDNEY DAVIES

Harrold,
Beds

1 *Health Trends*, 1970, **2**, 77.

SIR,—Professor George Dick (17 July, p. 163) did not, in my opinion, give us a complete picture of the situation.

For instance, he did not disclose if the 100 deaths from vaccinations in England and Wales occurred in primary vaccinations and, if so, at what ages, and, more important still, how many of these deaths occurred as a result of vaccinations carried out in the panic conditions prevailing in the campaigns associated with the many (13) importations of smallpox to the U.K. in the last 20 years.

Furthermore, Professor Dick did not perhaps stress that the excellent measures which have controlled outbreaks in Britain in the past—namely, "prevention of importation, isolation and tracing of cases, and vaccination and surveillance of probable contacts" are rendered more difficult to achieve today in an era of fast air travel from every part of the world, including no fewer than 23 countries in which a total of no fewer than 31,000 cases of smallpox were reported last year. The standards of certification and control in some at least of these countries leave much to be desired. The *risk* of importation of smallpox is therefore greater than ever.

It seems to me foolhardy in these circumstances to abandon a measure which would prevent the fatalities which occurred in the past. Whatever exhortations are issued to the people, they will inevitably rush to get vaccinated as soon as an outbreak occurs. It is in these circumstances that vaccination becomes dangerous.

Smallpox vaccination carried out at the appropriate age under strict aseptic conditions, preferably by the single scratch method, with instruments reserved solely for the purpose, and the wound covered by an aseptic dressing until the scab falls off, is invariably safe and successful. I have never known it to be otherwise. On the other hand to advise people to postpone vaccination "until it is needed" is to court disaster. It may be too late.

Smallpox vaccination provides full protection for three years and partial or residual immunity for many more years which results in a revival (or boost) of immunity with a diminished risk of severe local reaction in any subsequent revaccination which may be required.

In these circumstances there seems to me to be no valid reason to give up this most useful measure, at least not until smallpox has been completely eradicated from every part of the world—I am, etc.,

W. H. CRICHTON

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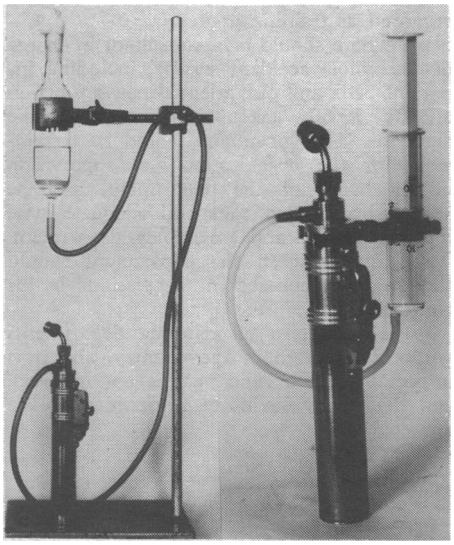
near Colchester, Essex

Mass Immunization Technique

SIR,—The Porton Needle-less Injector was designed for mass immunization and three have been used very successfully by Oxfam workers in the cholera epidemic amongst the refugees from East Pakistan. Under these conditions the Injector is connected to a vaccine reservoir of suitable size (50-500 ml) by a length of Neoprene tubing (Fig. 1). For satisfactory operation the tubing must be completely filled with vaccine, free of bubbles, and the injector fully primed. The instrument can be adjusted to give doses of 0·1, 0·25, 0·5, 0·75 or 1 ml as required. Most vaccines and therapeutic agents for use in small quantities by injection are usually prepared in ampoules of 0·5 to 10 ml which have to be opened and poured into the reservoir. For mass immunization the total volume of vaccine to be used usually exceeds 50 ml and the reservoir can be as large as required.



Circumstances do occur, however, when the technique of needle-less injection is of value but for various reasons only a small volume is likely to be used and the large reservoir and attached tubing inhibit the use of the technique. Under these conditions the following procedure is recommended. The material to be injected should be taken from the ampoules into a suitable syringe. A short length of Neoprene tubing (about 20 cm) is then attached to the nozzle of the syringe, and when all the air has been expelled the free end of the tubing is pushed on to the side arm of the injector. The syringe reservoir is then attached to the injector by means of a pair of spring clips held together by a small bolt (Fig. 2). One clip grips the injector and the other the syringe. If the syringe is filled to a little more than the marked capacity the tubing can be filled and the injector primed for use in the usual way so that the piston descends to near the normal capacity level of the syringe. Any size of syringe between 2 and 50 ml can be used in this way.

This modification enables the needle-less injection technique to be used when only small total volumes of material are needed or are available. The method makes for greater economy and allows the operator total freedom of movement since the injector is not connected to a static reservoir. It can be used at any angle or in any position. When empty the reservoir can be discarded and a fresh loaded syringe attached to the Neoprene tube. If a bubble is introduced into the tube it can easily be withdrawn into the reservoir. This method may be of particular value when a large number of 0·1-ml inoculations need to be given—for example, typhoid and cholera vaccines, or in skin testing, and removes the necessity for numerous graduated syringes and/or repeated changes of needle—I am, etc.,

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Scotland's Anaesthetists

SIR,—Dr. G. D. Parbrook (31 July, p. 293) rightly draws attention to the current shortage of anaesthetists. However, his decision to ignore the existence of the important S.H.O. grade and his failure to relate the number of anaesthetists to the population are hard to understand. The registrars are recruited from the S.H.O. grade and any expansion of the number of anaesthetists in training must start in this grade. It is perhaps unfortunate that Dr. Parbrook's article appeared in an issue of the *B.M.J.* that advertised 68 anaesthetic vacancies (p. xiv), only one (S.H.O. at Perth) being in Scotland.

All medical staffing statistics must be related to population, as both surgeons and anaesthetists exist to give a service to a section of the population. Scotland has approximately 10% of the population of England and Wales and Dr. Parbrook's Table IV shows that the number of consultant posts in surgery and anaesthetics in Scotland is respectively 16% and 13% of that in England and Wales, but the seriousness of the shortage of anaesthetists is not so much in numbers as in maldistribution of slender resources. In England and Wales there are 4·8 anaesthetists for 100,000 population while in Scotland there are 6·5. However, there is a gross disproportion of anaesthetic staffing between the peripheral and city areas as can be illustrated by the fact that Ayrshire has four anaesthetists per 100,000 while Glasgow has 14.—I am, etc.,

L. R. WALKER

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SIR,—Dr. G. D. Parbrook (31 July, p. 293) may be correct in arguing that there is a need to increase the number of doctors in training for consultant anaesthetist posts, but the statement that there is "a shortage of senior anaesthetists in Scotland relative to England" needs closer examination.

His case is based on the ratio of consultant surgeons to consultant anaesthetists being unfavourable to Scotland. However, in 1968 there were 10·4 consultant "surgeons" for every 100,000 people in Scotland compared to 6·7 in England, comparable figures for consultant anaesthetists being 2·93 and 2·36. ("Surgeons" includes the specialties in Dr. Parbrook's Table IV plus ophthalmology, gynaecology, and dental surgery.) No comparative figures for surgical operations are available for the same year, but at that time each "surgeon" in Scotland was responsible for 600 inpatient discharges compared to 740 per "surgeon" in England and Wales, with this relativity still applying when trainees in the senior registrar and registrar grades are included (340 to 415).

Applying the number of surgical discharges to anaesthetists the following emerges:

	Scotland	England and Wales
Consultant anaesthetists	2,160	2,110
Consultants plus senior registrars, plus registrars	1,310	1,290

Surgical inpatient discharges per anaesthetist 1968.

Patients, as represented by surgical discharges, are to my mind a better indirect measure of anaesthetic work-load than "surgeons," and on this score there is no significant difference between the two countries. The best measure would be the number of fully utilized theatre sessions, and unless it can be shown that the greater number of Scottish surgeons serving a similar sized population to their English and Welsh colleagues generate more of these, then the argument that there is a relative shortage of anaesthetists in Scotland cannot be sustained.

While I cannot agree with some of Dr. Parbrook's conclusions, he must be congratulated on shining some light on the problems of staffing and training. The complexities of manpower planning in medicine are immense, and are often underestimated in the present discussions on career structure.—I am, etc.,

H. G. PLEDGER

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Berks

Halothane Hepatitis

SIR,—Professor B. R. Simpson and his colleagues (24 July, p. 245) have mistaken the aim of our study (3 July, p 18). It was not intended to supply an answer to whether halothane is the causal element in "post-